

CLAIMS:

1. A diaphragm device, comprising:
 - a diaphragm board having an aperture forming a light path;
 - a diaphragm blade disposed on one face of the diaphragm board, and adjusting the aperture of the diaphragm for the light path by sliding along the board face;
 - a diaphragm driving device driving the diaphragm blade to adjust the aperture of the diaphragm for the light path;
 - an optical filter having transmission characteristics in accordance with a wave length; and
 - a filter driving device to insert the optical filter into and retract it from the light path,wherein said optical filter is formed in a thin film, disposed on one face side of said diaphragm board, and provided slidably along said diaphragm blades.
2. The diaphragm device according to claim 1, wherein two sheets of said diaphragm blades are provided in a stacked state to each other, and the optical filter formed in said thin film is disposed between those two sheets of the diaphragm blades.
3. The diaphragm device according to claim 1, wherein said optical filter is an infrared cutoff filter blocking light in the infrared region, and formed in a thin film of 0.25 mm or less in thickness.
4. The diaphragm device according to claim 1, wherein said optical filter is pivotably supported by a shaft provided at one end portion of the diaphragm board, and is inserted into and retracted from the light path by being pivoted around the shaft.

5. The diaphragm device according to claim 1, wherein both said diaphragm driving device and filter driving device are disposed on the same side of said light path on said diaphragm board.

6. The diaphragm device according to claim 1, wherein said filter driving device is provided with a filter holding device holding the optical filter at a first position magnetically when said optical filter is at the first position side rather than at a middle position of the first position in the light path and a second position departing from the light path, holding the optical filter at the second position magnetically when the optical filter is at the second position side rather than at said middle position.

7. The diaphragm device according to claim 6, wherein said filter holding device comprises:

a permanent magnet provided on a rotor of the motor driving said optical filter;
and

a magnetic piece disposed at a position in equal distance from mutually adjacent north and south poles of said permanent magnet, when said optical filter is driven toward the middle of the path between said first and second positions, generating force of attraction between the magnetic piece and either said north pole or said south pole, thereby causing the rotor to pivot.

8. The diaphragm device according to claim 1, wherein an ND filter being different from said optical filter is provided in a transmitting hole forming a diaphragm aperture of said diaphragm blade, and this ND filter includes spectroscopic transmittance

characteristics in which the transmittance in the infrared region is substantially equal to that in the visible light region.

9. The diaphragm device according to claim 2, wherein said optical filter is an infrared cutoff filter blocking light in the infrared region, and formed in a thin film of 0.25 mm or less in thickness.

10. The diaphragm device according to claim 2, said optical filter is pivotably supported by a shaft provided at one end portion of the diaphragm board, and is inserted into and retracted from the light path by being pivoted around the shaft.

11. The diaphragm device according to claim 3, wherein said optical filter is pivotably supported by a shaft provided at one end portion of the diaphragm board, and is inserted into and retracted from the light path by being pivoted around the shaft.

12. The diaphragm device according to claim 2, wherein both said diaphragm driving device and filter driving device are disposed on the same side of said light path on said diaphragm board.

13. The diaphragm device according to claim 3, wherein both said diaphragm driving device and filter driving device are disposed on the same side of said light path on said diaphragm board.

14. The diaphragm device according claim 4, wherein both said diaphragm driving device and filter driving device are disposed on the same side of said light path on said diaphragm board.

15. The diaphragm device according to claim 2, wherein said filter driving device is provided with a filter holding device holding the optical filter at a first position magnetically when said optical filter is at the first position side rather than at a middle position of the first position in the light path and a second position departing from the light path, holding the optical filter at the second position magnetically when the optical filter is at the second position side rather than at said middle position.

16. The diaphragm device according to claim 3, wherein said filter driving device is provided with a filter holding device holding the optical filter at a first position magnetically when said optical filter is at the first position side rather than at a middle position of the first position in the light path and a second position departing from the light path, holding the optical filter at the second position magnetically when the optical filter is at the second position side rather than at said middle position.

17. The diaphragm device according to claim 4, wherein said filter driving device is provided with a filter holding device holding the optical filter at a first position magnetically when said optical filter is at the first position side rather than at a middle position of the first position in the light path and a second position departing from the light path, holding the optical filter at the second position magnetically when the optical filter is at the second position side rather than at said middle position.

18. The diaphragm device according to claim 5, wherein said filter driving device is provided with a filter holding device holding the optical filter at a first position magnetically when said optical filter is at the first position side rather than at a middle position of the first position in the light path and a second position departing from the light

path, holding the optical filter at the second position magnetically when the optical filter is at the second position side rather than at said middle position.

19. The diaphragm device according to claim 2, wherein an ND filter being different from said optical filter is provided in a transmitting hole forming a diaphragm aperture of said diaphragm blade, and this ND filter includes spectroscopic transmittance characteristics in which the transmittance in the infrared region is substantially equal to that in the visible light region.

20. The diaphragm device according to claim 3, wherein an ND filter being different from said optical filter is provided in a transmitting hole forming a diaphragm aperture of said diaphragm blade, and this ND filter includes spectroscopic transmittance characteristics in which the transmittance in the infrared region is substantially equal to that in the visible light region.